such that at least about 95 percent of the particles have a diameter greater than about 40 percent of the average diameter and less than about 160 percent of the average diameter.

REMARKS

Claims 1-6 and 20-31 remain for consideration. Claims 7-19 have been canceled without prejudice in view of a restriction requirement. Claims 1 and 5 have been amended to more distinctly claim Applicants' invention. The support for the amendment to claim 1 can be found in the specification, for example, at page 19, lines 5-10. The support for the amendment to claim 5 is found in the specification, for example, at page 19, lines 11-20.

New claim 20 is supported by the specification, for example, at page 19, lines 16-20. New claim 21 is supported by the specification, for example, at page 22, lines 4-5. New claims 22 and 23 are supported by the specification, for example, at page 22, lines 28-31. New claim 24 is supported by the specification, for example, at page 23, line 8-10. New claim 25 is supported by the specification, for example, at page 22, lines 17-22. New claim 26 is supported by the specification, for example, at page 23, lines 3-4. New claims 27 and 28 are supported by the specification, for example, at 23, lines 27-31. New claim 29 is supported by the specification, for example, at page 18, lines 9-10. New claim 30 is supported by the specification, for example, at page 21, lines 29-30. New claim 31 is supported by the specification, for example, at page 2, lines 15-22, page 23, lines 30-31 and page 24, lines 28-31. No new matter is introduced by the amendments to claims 1 and 5 or by the addition of claims 20-29.

The Examiner imposed a restriction requiring the election of one of three sets of claims. The groups of claims included, respectively, (I) claims 1-6 directed to display devices, (II) claims 7-12 directed to phosphor compositions and (III) claims 13-19 directed to a method for making zinc oxide particles.

Applicants hereby affirm the election of the first group with claim 1-6. Claims 7-19 have been canceled without prejudice.

Rejections Under 35 U.S.C. §102(b) Over Bhargava

The Examiner rejected claims 1, 2, 4 and 6 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent 5,455,489 to Bhargava (the Bhargava patent). In particular, the Examiner cited the Bhargava patent for disclosing the use of phosphor particles in a display having an average diameter less than 100 nm, where the particle size is selected to yield light in a desired portion of the spectrum. Applicants have amended their claims to more particularly point out their invention. Applicants request reconsideration of the rejections over Bhargava based on the following comments.

The Bhargava patent does not teach or suggest the selection of particle size as a way of tuning the emission frequencies of phosphor particles. Instead, the Bhargava discloses doping for the tuning of emission frequencies, see, for example, column 4, lines 8-22 and column 5, lines 14-29. Applicants describe the use of a strongly non-equilibrium approach, laser pyrolysis, for the production of nanoparticles with a very narrow particle size distribution. The Bhargava patent does not describe the production of particles with the narrow particle size distribution disclosed and claimed by Applicants. Thus, the Bhargava patent does not Anticipate Applicants' claimed invention. Applicants respectfully request the withdrawal of the rejection of claims 1, 2, 4 and 6 under 35 U.S.C. §102(b) as being anticipated by the Bhargava patent.

Rejection of Claims Under 35 U.S.C. §102(b) Over Jaskie

The Examiner rejected claims 1 and 6 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent 5,442,254 to Jaskie (the Jaskie patent). The Examiner cited the Jaskie patent for disclosing a display including nanoscale phosphor particles having a diameter less than about 100 nm where the particle size is

selected to yield light in a desired portion of the spectrum. Applicants have amended claim 1 to more particularly point out their invention. Applicants respectfully request reconsideration of the rejections of claims 1 and 6 over Jaskie in view of the amendments and the following comments.

The Jaskie patent does not disclose a particular particle size distribution for their particles. Applicants have amended their claims to specify a particular narrow particle size distribution. Therefore, the Jaskie patent does not anticipate Applicants claimed invention. Applicants respectfully request the withdrawal of the rejection of claims 1 and 6 under 35 U.S.C. §102(b) as being anticipated by the Jaskie patent.

Rejections Under 35 U.S.C. §103(a) Over Bhargava

The Examiner rejected claims 3 and 5 under 35 U.S.C. §103(a) as being unpatentable over Bhargava. In particular, the Examiner asserts that it was generally recognized to be within the skill of the art to obtain a desired particle size range. Applicants respectfully maintain that it was not within the skill in the art to produce a narrow particle size distribution as disclosed and claimed by Applicants. Applicants request reconsideration of the rejections of claims 3 and 5 over Bhargava.

For support of the assertion that narrow particle size distributions can be obtained, the Examiner points to column 7, lines 34-40 of the Jaskie patent. The unpracticed description in the Jaskie patent is at best a highly speculative approach and is unlikely to result in a narrow particle size distribution. Chromatography and electrophoresis are used to separate chemicals according to charge, chemical properties and mass. The separation is a complex interaction of these various properties. These techniques have not been used to separate, by minute mass differences, materials of identical chemical composition. There is absolutely no reason to expect this approach to work. Just dispersing these particles is no simple undertaking, and the

particles must be extremely well dispersed for mass separation to make any sense. For arguments sake, even if a mass separation took place, the particles very likely could not be separated again from the substrate used for separation. Capillary action is an important aspect of the paper chromatography and electrophoresis separation approaches for chemicals. Removing the inorganic particles from the capillaries of the separation substrate to obtain a collection of particles to place in a display may likely be impossible. While proteins of comparable nanoscale sizes in some cases can be separated from electrophoresis gels, proteins are much more soluble and dispersible in solutions than inorganic powders. The Jaskie patent does not even provide any guidance to perform the wet filtration separation approach. In contrast to the wet filtration proposal in the Jaskie patent, Applicants describe an approach for the direct production of a collection of particles with a narrow particle size.

Applicants do not believe that obtaining a narrow particle size distribution was within the level of skill in the art. Furthermore, the Bhargava does not motivate the use of a narrow particle size distribution. The Bhargava patent uses dopants to select the emission wavelength. For both of these reasons, the Bhargava patent does not render Applicants' claims obvious. Applicants respectfully request the withdrawal of the rejection of claims 3 and 5 under 35 U.S.C. §103(a) as being unpatentable over Bhargava.

Rejection Under 35 U.S.C. §103(a) Over Jaskie

The Examiner rejected claim 5 under 35 U.S.C. §103(a) as being unpatentable over the Jaskie patent. In particular, the Examiner pointed to language in the Jaskie patent for support of the proposition that a person of skill in the art could select a desired narrow particle size distribution. Applicants respectfully request reconsideration based on the following comments.

As noted above, the wet filtering technique described at column 7, lines 34-40 of the Jaskie patent would not be expected to successfully produce a collection of nanoparticles with a very narrow particle size distribution for incorporation into a display device. The mere suggestion to use the technique in the Jaskie patent, without any details on how to make the approach work, does not come close to placing nanoparticles with a very narrow particle size distribution within the grasp of a person of skill in the art. Thus, the Jaskie patent does not render Applicants' claimed invention obvious. Applicants respectfully request the withdrawal of the rejection of claim 5 under 35 U.S.C. §103(a) as being unpatentable over the Jaskie patent.

CONCLUSIONS

In view of the above amendments and remarks, Applicants submit that this application is in condition for allowance, and such action is respectfully requested. The Examiner is invited to telephone the undersigned attorney to discuss any questions or comments that the Examiner may have.

The Commissioner is authorized to charge any fee deficiency required by this paper or credit any overpayment to Deposit Account No. 23-1123.

Respectfully submitted,

WESTMAN, CHAMPLIN & KELLY, P.A.

By: Peter S. Dardi

Peter S. Dardi, Ph.D., Reg. No. 39,650
Suite 1600 - International Centre
900 Second Avenue South
Minneapolis, Minnesota 55402-3319
Phone: (612) 334-3222 Fax: (612) 334-3312

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